NOVA SCOTIA ENVIRONMENT AND LABOUR

DISCUSSION PAPER ON PITS

INTRODUCTION

Nova Scotia Environment and Labour wants to engage operators and stakeholders in a discussion of the appropriate standards for pits. There are various issues surrounding pits and quarries. A number of issues are common to both excavation types, while others are unique to pits or to quarries. This discussion paper focuses on pits. Future efforts will address quarries separately.

Aggregate is a generic term used to describe inert materials, such as sand, gravel and rock that are valued largely for their physical strength characteristics. Virtually everything we build requires aggregate materials, either as an engineered soil base for stability or in the form of concrete or asphalt products. Aggregate is used both in and under our roads, highways, streets, sidewalks, airports, railways, parking lots, sewers, foundations and in the buildings themselves. Other specialty uses include pre-cast concrete products, filtration in septic fields, backfill in underground mines, winter road sanding, landscaping, and armoring 'rip-rap', which prevents erosion on shorelines and water courses. In spite of the enormous technological strides over the last century, there are still no economically viable substitutes for aggregate in the construction industry. Aggregate is a critical resource for the province.

Aggregate is available mainly in two types of geological formations, that typically consist of unconsolidated sand and gravel deposits, and crushed stone derived from bedrock. Unconsolidated materials (sand and gravel) are typically mined from pits, which are excavations where material is removed by mechanical means only – without explosives. Quarries are excavations where explosives are used to separate and remove rock that is consolidated material, and generally produce crushed and washed stone.

Deposits of unconsolidated aggregate materials (i.e. sand and gravel) are fixed in their location, reflecting Nova Scotia's glacial history. The aggregate industry requires access to the resource, yet there are competing land uses. Community development can be affected by access to aggregate materials at reasonable costs.

In Nova Scotia, the aggregate sector has seen strong growth, largely due to an improved economy and population growth in urban areas. For example, the number of applications received by the department for quarries has risen from 10 in 2000 up to 27 in 2004. In the past number of years, there has been growing public concern and opposition to the establishment of new pits and quarries, especially in close proximity to human developments, where people want to live in relative peace and quiet.

Besides public concerns, the industry has its own concerns. Industry representatives have expressed a desire for a level playing field, where all operators follow the same regulatory requirements. Industry stakeholders are also concerned about costs associated with the application and approval process, not just in terms of dollars, but also the time associated with regulatory processes. The provincial government has to address limited resources, high public expectations, liability issues, and a commitment to reduce red tape, while meeting environmental objectives.

With all of these concerns, it is apparent that the time has come to discuss pit operations to create a fair system which balances the interests of all parties. This discussion will lead to a new standard for pit operations. The standard will focus on which issues must be addressed, and identify approaches for producing aggregate while achieving environmental protection. Future efforts will focus on issues associated with quarries.

ENVIRONMENTAL AND SOCIO-ECONOMIC ISSUES

The environmental issues surrounding pits have been well documented, and include:

- **noise** associated with truck traffic and removal of the material;
- **dust** generated from removal of unconsolidated material, screening of material, loading of material onto trucks, truck traffic and the stockpiling of material;
- **siltation** from settling ponds and exposed active areas travelling into surface waters, potentially affecting drinking water and aquatic habitats; and
- **acid drainage** - Halifax formation slates, which are very common in Nova Scotia, have the potential to generate acidic runoff when exposed to air and water. This acidic runoff has the potential to leach heavy metals from rock, and to leach nutrients from soils and impact aquatic environments.

Depending on the material being extracted, each type poses its own risk to the environment. Clay material can create an unhealthy environment for fish habitats. Silica sand can create public health concerns. Halifax slate can create acidic conditions and heavy metal contamination which can affect both terrestrial and aquatic habitats.

Other concerns expressed by the public are more related to social and economic issues such as truck traffic; which raises safety concerns, may decrease property values, and can affect reasonable enjoyment of property. Aesthetic, or appearance, concerns are also raised about operations close to residential areas and their potential effects on property values.

There are also socio-economic issues associated with restricting aggregate operations. Prime among these is the fact that lack of available aggregate within an economic distance of a community can negatively impact economic opportunities within that community. There is also the positive economic contribution of the industry in jobs, goods and services, local taxes, etc.

Another issue, both environmental and socio-economic, relates to reclamation of sites after aggregate has been extracted. Reclamation usually involves activities such as removing structures, safely filling in excavations, and establishing vegetation. There is a need for reclamation of existing pits and investigating opportunities to provide for reclamation of abandoned pits.

AGGREGATE INDUSTRY IN NOVA SCOTIA

Aggregate is characterized as a high-bulk, low-value commodity. The value of an aggregate deposit is influenced as much by the location as it is by the quality of the mineral. The cost of transportation often exceeds the value of the mineral itself. A 'perfect' gravel deposit in a remote and inaccessible location has no value, while a marginal quality deposit close to an urban centre or a deep water harbour may have considerable value, both for the owner and for a municipality.

In Nova Scotia, aggregate from all pits and quarries generally ranks second in terms of product value and first or second for employment from mining. Sand and gravel production in the province, primarily from pits, is a significant economic generator. Based on data collected by Nova Scotia Department of Natural Resources, production in 2003 was as follows:

Crushed stone: 7,079,084 tonnes; $47,846,927 product value, 301 employees

Sand/gravel 3,765,293 tonnes; $18,588,028 product value; 281 employees

The major use of aggregate in Nova Scotia is for road construction and maintenance. The single largest client for the aggregate industry in Nova Scotia is the Department of Transportation and Public Works. About ten percent of Nova Scotia's aggregate is exported.

CURRENT LEGISLATIVE FRAMEWORK

Since 1995, any adverse effect caused by a pit operation can lead to charges under the provincial *Environment Act*. Since 1978, the department has used Pit and Quarry Guidelines as the standard against which aggregate operations would be assessed. The guidelines were updated in 1999.

These guidelines were originally developed as a result of a Deputy Minister's Task Force on Land Use, in which pit and quarry operations were identified as a significant issue facing communities and the environment. The guidelines were developed in consultation with the Department of Transportation and the Nova Scotia Road Builders Association. The guidelines address issues such as noise, dust, siltation in surface water, separation distances from the working face to dwellings, watercourses or roads, and financial securities requirements for the purpose of site rehabilitation.

All pits were designated as an activity requiring an approval under the Nova Scotia Activities Designation Regulations until 17 June 2005. After this date, pits under 2 ha in area were exempt from requiring an approval. This change was made to reflect that small pits usually tend to fall into a low risk category for adverse environmental effects, so the department can focus their efforts on medium and high risk activities. As well, this change will reduce costs for pit operators and allow for more flexibility in their operations.

All approvals issued to operators contain terms and conditions which cover the particular items addressed within the Pit and Quarry Guidelines. There can also be site specific terms and conditions as well. All approvals under the *Activities Designation Regulations* are valid for a period of ten years, while approvals under the *Environmental Assessment Regulations* do not have an end date.

Currently, pits used solely for road building or maintenance contracts undertaken by or for the Department of Transportation and Public Works are exempt from the requirement for any approval. However, they are required to follow the Pit and Quarry Guidelines.

OTHER JURISDICTIONS

All Canadian provinces and territories require permits, fees, government review, and reclamation for pits. All jurisdictions except Quebec have exemptions from the permit process. These exemptions can apply to private landowners, non-profit organizations, forestry operations and others, but the most common apply to municipalities and public works/transportation.

Formal environmental assessments of pit operations can be required in five jurisdictions. Newfoundland and Labrador, British Columbia, and Ontario have triggers of size, volume and use of Crown land, respectively. Seven jurisdictions require or allow for public review of pit operation applications.

While not the case in Nova Scotia, land use planning provisions to allow access to aggregate resources are incorporated into acts, regulations and by-laws in nine provinces and territories, including New Brunswick and Newfoundland and Labrador.

Separation distances for pit operations from human structures or natural features are mandatory in ten jurisdictions (all but Nunavut and NWT). The distances that pits must be separated from residential or public buildings range from 30 m in Ontario to 500 m in Prince Edward Island. Distances from watercourses or wells vary from 30 m in Ontario to one kilometre in Quebec.

NEXT STEPS

The province is seeking input from a variety of stakeholder groups, industry representatives, non-government organizations, and the general public to assist in developing a standard that will allow pit operations to be competitive while protecting and even enhancing our environment. To help focus our discussion, we have created a list of questions. Please feel free to use as much space as you require, adding spaces or pages if needed.

Part I Standards

Nova Scotia Environment and Labour has used Pit and Quarry Guidelines as the standard against which aggregate operations are assessed. The guidelines address issues such as noise, dust, siltation in surface water, separation distances from the working face to dwellings, watercourses or roads, and financial securities requirements for the purpose of site rehabilitation. Copies of the guidelines are available for comparison if desired as we work on ideas for new and/or revised operating standards for pit operations.

(1) What environmental standards must be required of all pit operations regardless of size? Please check and fill out which issues for which there should be standards, and what those standards should be.

Issue	Yes	No	If yes, what standards?
groundwater protection			
surface water protection			
erosion and sedimentation control			
noise			
dust			
reclamation			
other			

Part II Compliance

Updated standards for all pits will be identified. The next series of questions are intended to identify which processes and tools should be used to help pit operators achieve compliance with standards.

(2) What should be the environmental approval process for pit operations? What would be practical and effective? Why?

(3) How and who do you view as responsible for monitoring for compliance with standards?

(4) To enhance compliance, what information tools would help pit operators to understand potential impacts of operations and responsibilities to meet standards? (e.g. best practices guide, workshops, etc.)

(5) How can the reclamation of pit sites best be achieved? Should we apply reclamation standards only to new pits? To new and existing pits? To old pits?

(6) Are there any other comments that you would care to provide?

THANK YOU

Thank you for taking the time to share your thoughts on developing a standard for pits in Nova Scotia. Your contribution will help us protect our environment while also ensuring an important industry is able to meet the needs of Nova Scotians.